REMARKS

Claims

Claims 79–83 and 85–117 are currently under examination with claims 1–78, 84 and 118–121cancelled without prejudice or disclaimer. Claims 122–129 are added by this paper.

Applicants gratefully acknowledge that the subject matter of the claims is free of prior art.

Claim Amendments

Claims 87, 88, 95 and 96 have been amended to incorporate the subject matter of claims 118–121, which are cancelled hereby without prejudice or disclaimer.

The amendment of claims 88 and 96 is supported by the disclosure contained in, for example, paragraphs [0044] and [0045] of the published application. The subject matter cancelled from the claims is presented in new claims 122–129. No new matter is added.

Claim 102 has been amended to eliminate multiple dependency. Examination of the claim is cordially requested.

Claim 113 has been amended to recite proper dependency, in accordance with the Examiner's suggestion.

Claim objections

The Examiner is thanked for her careful review of the claims. The forgoing amendments render the objection of claim 102 moot. Withdrawal of the objection is respectfully requested.

Rejection under §112, ¶2

The Office Action at page 4 alleges that "a combination of SEQ ID NO: 33 and SEQ ID NO: 35," as recited in claims 80 and 90 is unclear. Applicants respectfully disagree with this contention. The claims in contention depend on claims 95 and 87 respectively. As explicitly stated under paragraphs [0055]-[0057] of the published application, the recognition molecules comprise a *combination* of "triplet sequences with antibody framework sequences," wherein "the amino acid sequences corresponding to FRH1, FRH2, FRH3 and FHR4 in Table 2 for the variable heavy chain and the amino acid sequence corresponding to FRL1, FRL2, FRL3 and FRL4 in Table 2 for the variable light chain [comprise] the amino acid sequences of the triplet sequences 1 and 2 with SEQ ID Nos. 1 to 12 corresponding to the corresponding CDR regions of the antibodies." It is further taught that "SEQ ID Nos. 32 and 33 correspond to amino acid sequences with preferred framework sequences for the variable heavy chain" and that "the amino acid sequences SEQ ID

Nos. 34 and 35 correspond to amino acid sequences with preferred framework sequences for the variable light chain." To this end, the specification explicitly teaches that the combination comprising SEQ ID NO. 32 and 34 and the combination SEQ ID NO. 33 and 35 are particularly preferred.

With respect to claims 88 and 96, the Examiner is thanked for his careful reading of the claims. The forgoing amendments and remarks render the rejection of these claims under §112, ¶2 moot. Withdrawal of the rejection is respectfully requested.

Rejection under §101 (non-statutory subject matter)

The Office Action continues to contend that the recognition molecules of the instant invention *could exist* in nature. Applicants respectfully disagree. However, purely in order to facilitate prosecution, the claims have been amended to recite "recombinant or synthetic" recognition molecules. Support for the claim amendment can be found, for example, in the Examples (i.e., recombinant means of production of recognition molecules of the invention) and the disclosure in the sequence listing page (i.e., synthetic). With respect to the "new matter" rejection under §112, ¶1, see *infra*.

Withdrawal of the rejection is respectfully requested.

New matter rejection under §112, ¶1

Under item 14, the Office Action alleges that the specification does not provide support for *synthetic* recognition molecules. This contention is respectfully traversed. The sequence disclosure section of the application explicitly teaches that the peptides having the amino acid sequences recited in the claims are "synthetic peptides." Insofar as one of ordinary skill in the art has express understanding of the term "synthetic," explicit description thereof is not necessary at all. See, *Capon v. Eshhar v. Dudas*, (Fed. Cir. 2005) 418 F.3d 1349, 76 U.S.P.Q.2d 1078. Such synthetic peptides may be prepared by *chemical* (for example, coupling individual amino acid residues which make up the claimed sequences together) as well as *biotechnological* (for example, expression of a nucleotide encoding the claimed sequences in an appropriate host) means. Withdrawal of the rejection is respectfully requested.

Rejection under §112, ¶1

The rejection of claims 79–83, 85, 86 and 87–116 under 35 U.S.C. §112, first paragraph as allegedly lacking enablement is respectfully traversed.

At the outset, it is submitted that the forgoing amendments obviate the rejection of claims 88

and 96 for allegedly being non-enabling with respect to the structure of the recognition molecules. No agreement is to be implied.

Under item 12, the Office Action alleges that "none of the experiments in the declaration, or in the instant specification, provide evidence to support prevention of the development of cancer by administering the antibody before administration of the cancer cells, or by preventing the development of a tumor or predicting the development of a tumor" (cf. page 5, 2nd paragraph of the Office Action). As such, the methods for predicting, preventing, follow up or after-care, or treatment of metastasis of MUC-1 expressing tumor, and for treatment, reducing or diagnosing of a non-MUC-1 associated tumor are rejected as allegedly being non-enabled. Applicants respectfully disagree.

It is submitted that the SK-LC-4 mouse tumor (prevention) model described and referred to in Dr. Danielczyk's Declaration filed October 3, 2008 provides sufficient evidence for the aspects for enablement. In particular, in the mouse tumor model human lung cancer cells were injected prior to an antibody molecule encompassed by the scope of the claimed recognition molecule. This initial treatment was followed by subsequent administration of the antibody. The result shown in Figure 17B of the declaration provides sufficient evidence that, in comparison to a control group which did not receive an antibody, antibody-treated human lung cancer cells could not properly settle and thus form a tumor. This result demonstrates that the antibody is useful in preventing tumor formation. Indeed, the antibody prevented cells from forming a tumor in the mouse model.

The impact of this result is even more surprising and fully supports the claimed prophylactic and therapeutic end-uses. Namely, the mouse model used in the above described experiment is known for unfavorable accessibility resulting from the use of human cancer cells and SCID mice with a very limited immune effector system. Hence, preventing the formation of tumors in mice which have a very limited immune system is supportive for the claimed prophylactic uses.

The PTO's contention that administration of an antibody would have to precede administration of tumor cells in order to acknowledge enablement for prophylactic uses is misplaced. In fact, the time between administration of tumor cells and antibody in the mouse tumor model referred to in the Declaration was only 3 hours. There would be no difference if the antibody would have been administered prior to the tumor cells. In fact, this administration scheme reflects the claimed prophylactic use insofar as, for example, during surgery (when a tumor is removed from a patient) tumor cells may detach from the tumor tissue, float in the blood stream and then begin to metastasize.

This aspect is envisaged by the claimed prophylactic and end-use aspects and in view of the results obtained from the mouse tumor model, there can be no doubt that these aspects (prevention

of the development of a tumor, follow-up, after care and treatment of metastasis) works. To this end, the mouse model described in the declaration demonstrates that the antibody prevents tumor cells from forming a tumor. This is desired in a follow-up treatment, after care treatment and for preventing the development of metastases. Similarly, the mouse (therapeutic) model referred to in the Declaration fully supports the claimed end-uses. In fact, the mouse model demonstrates that the antibody dramatically reduces the tumor volume which is indicative of its efficacy in killing tumor cells. From the data presented in the Declaration, the skilled artisan understands that the antibody will be useful for treating metastases, if present in a patient's body.

The suitability of the claimed antibodies for prophylactic aspects and end-uses is also evidenced by the publication from the inventors (naming Dr. Danielczyk as first author who also signed the Declaration). A copy of Danielczyk *et al.* (*Cancer Immunology and Immunotherapeutics*, 55, 1337, 2006) is enclosed herewith for the Examiner's review. Specifically, the publication attests to the superiority of the claimed antibodies. More specifically, the publication describes the high specificity and affinity and ADCC potential of the claimed antibodies which make them suitable for preventing tumor development, follow-up and after care aspects.

As regards the use of the antibody for predicting a tumor, Applicants refer to the enclosed publication by Kuemmel *et al.* (*Lung Cancer*, 2008), a copy of which is also enclosed. Kuemmel *et al.* reports that the PankoMab antibody (antibody of the invention; see the publication by Danielczyk *et al.*) is useful for predicting NSCLC patient survival. Specifically, the presence of the epitope recognized by PankoMab is indicative of predicting the outcome of tumor development in a NSCLC patient. See for example, page 2, paragraph bridging col. 1 and col. 2 and the "Conclusion" section at page 9 of the enclosed Kuemmel reference.

The contention that treatment, reduction or diagnosing <u>non-MUC1 associated tumors</u> would not be enabled is respectfully traversed. Some inoperative embodiments are acceptable. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984); MPEP 2164.08(b). In any event, Applicants' specification discloses to one skilled in the art that the claimed antibodies recognize a glycosylated MUC1 tumor epitope. As such, the rejection is without merit.

Withdrawal of the rejection is respectfully requested.

In view of the above remarks, it is submitted that this application is in condition for allowance. If there are any remaining issues which could be expedited by a telephone conference, the Examiner is courteously invited to telephone counsel at the number indicated below.

The Commissioner is hereby authorized to charge any fees associated with this response to Deposit Account No. 13-3402.

Respectfully submitted,

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